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Arctic Oil Wells to Play a Vital Role

Canol Project Grows from Small Beginnings to Vast Importance

Development Born of Military Necessity and Pushed Forward Against Great Odds

LOCKED deep in the wilderness in the Canadian North-West Territories only a few miles from the Arctic Circle, four lone oil wells for years gave mute testimony to man's intrepidity in his search for the world's mineral wealth. Near a settlement marked by a pinpoint on the map, and known as Fort Norman, these wells yielded a mere trickle of oil, by the standard of American oilfields. From the time the first well was drilled in 1920 until the summer of 1942 they did their work unspectacularly. Oil men the world over knew of their existence but regarded them as little more than an indication that oil existed in this remote Arctic country in which they had been drilled.

Yet these four wells, operated for years merely to meet the small petroleum needs of trappers, mines, an occasional aeroplane and river boats, were to become the nucleus of one of the world's most unusual oilfields; a field which was destined to grow in a matter of months not only in size and productivity, but to a position of international significance. These wells and their companion wells drilled since the late summer of 1942 are the source of crude oil for the now famous Canol project, one of the most dramatic and interesting developments in the ever fascinating history of the oil industry.

"Canol" is a coined word, an abbreviated linking of "Canada" and "oil." Born of military necessity, and pushed forward against almost insurmountable odds by the teamwork of military and civilian authorities, the Canol project is to-day ready to produce oil which to-morrow will help fuel the planes, ships and military and naval equipment used in the increasingly important Alaskan theatre of war.

Back in July of 1919 a party of eight geologists and drillers of Imperial Oil Limited left Edmonton on the long trek to Fort Norman, reaching their destination in September. Here they prospected the region in which the hardy Scot explorer, Alexander Mackenzie, had reported oil seepages a hundred years before. Five of the group holed up there for the long Arctic winter, the others returned to civilisation. In May of the following year when river transport again was open, a group of seven pioneers again set out for Fort Norman, arriving there nearly two months later, on July 8th. The five hardy souls who had spent the winter at that lonely point welcomed them warmly. They had been living for the past month on a diet of flour and fish.

The party lost no time in starting drilling operations on sites selected the previous summer. By August 20th oil poured forth over the top of the derrick and the first oil well in the North-West Territories came into existence. Little did this band of oil men dream that summer's day that the work they brought to fruition was less than a quarter of a century later to play a significant rôle in the successful prosecution of World War II. Had they been able to look into a crystal ball on that historic occasion they might have seen oil pouring forth from this field in a steady stream to fuel giant bombers, fleet destroyers, rugged merchantmen, heavily laden motor trucks and a variety of military equipment.

The Fort Norman field, however, was intended originally to play a constructive peace-time rôle. Imperial Oil over the years developed this source of petroleum to supply oil to a very limited market in the North-West Territories. It was hoped that possibly the discovery of oil in that region might stimulate an industrial awakening in the far North. However, early hopes of a developing market failed to materialise. Production was limited to a few thousand barrels of oil per year and by 1924 only six wells had been drilled, three of which were producers. A small refinery had also been constructed; but the market continued to be so restricted that in the same year the wells were capped and the refinery shut down.

By 1932 a new chapter in the history of Norman Wells opened. Rich mineral deposits had been discovered at nearby Great Bear Lake. River traffic mounted. River boats required gasoline and the mine machinery needed fuel oil. So the wells and refinery were reopened and production resumed.

The oilfield lies in a muskeg-lake-hummock country of tremendous distances and vast areas untouched by man. The "routine" of oil deliveries was anything but routine at first. Barrels were loaded on wagons and hauled to the river's edge by dog teams. Barge facilities were inadequate and had to be constructed. The Bear River rapids barred one delivery route and an eight-and-a-half-mile pipeline—one of the first product pipelines in history—was built to circumvent them.

The following year the refinery was improved and a seventh well drilled. That year, too, equipment was installed to refine aviation gasoline. The aeroplane had begun to play an increasingly conspicuous and significant rôle in far North transportation—indeed, Imperial airmen made the first flight into the valley of the Mackenzie.

Geographically, the marketing area in this region encompasses thousands of square miles, but the market in terms of volume of products was small. In the language of the market analyst, it was diluted—by wilderness. In all of 1941 Imperial distributed from the Fort Norman field only about 80,000 gallons of aviation gasoline, 112,000 gallons of motor gasoline, 230,000 gallons of fuel oil. Typical customers were Eldorado Mines, the Hudson Bay Company, the Diocese of the Arctic, Slave Lake Gold Mines, United Air Services and Canadian Airways Limited, as well as what the company's books refer to as "sundry persons."

As a result of the development of this most northern oilfield on the American continent, the price of gasoline at the refinery had been reduced from more than two dollars a gallon to about thirty cents a gallon. Petroleum products were being supplied where they were badly needed, and where they could otherwise have been shipped only under great difficulty and at high cost.

But the Fort Norman field, remote and small as it was, was not completely unknown outside of the oil industry. The military leaders of the United States, whose job it is to provide sources of petroleum for their armies and navies, had made note of Norman Wells for possible future reference.

The third chapter in its development started soon after the bombing of Pearl Harbour.

Our military leaders knew that to defend Alaska and ultimately to strike at Japan from that territory would call for the use of tremendous quantities of fuel and equipment. Alaska was insular, accessible only by sea and air. True, it was possible to ship men and fuel to Alaska, but not only were our freighters and tankers strained to the breaking point in those early days of the war, there was the real and ever present threat of enemy action in Pacific waters.

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To the military mind, trained to deal with realities as well as provide against contingencies, the answer was obvious—a road to Alaska and a source of fuel independent of the sea. The twin results were the Alaska Highway and Canol project.

Virtually overnight Norman Wells, the only proved source of oil in the Great North-West, became of vital military importance. To its one hundred odd customers there was added a new one, the United States Army.

Late in April, 1942, officials of Imperial Oil, Limited, were summoned to Washington. There the Army outlined a plan for building a pipeline from Norman Wells 600 miles across the Mackenzie-Yukon divide to White Horse on the Alaska Highway, where it was proposed to build a refinery for processing the oil into the needed products. Crucial questions were how much oil could be produced at Norman Wells and how soon. The Army might need a lot and in a hurry. As the only commercial producer of oil in this region and with years of experience behind it, the Army looked to Imperial Oil for the answer.

Potential Not Known

The answers which had to be given were not too encouraging. The actual potential of the Norman oilfield was not known because peace-time markets had not justified the drilling that is needed to determine an oilfield's extent. Furthermore, the existing wells had been operated only during the short summer season and out of four potential producing wells only three were actually in operation. It remained to be seen how the oil pool would behave under conditions of year-around operation with a greatly increased number of wells. In the conservative judgment of Imperial's experts, the chances of meeting the Army's requirements could be considered only fair. In addition, still other difficulties loomed—namely, the problem of securing personnel and equipment under war-time conditions, plus the further problem of transportation over primitive and inadequate facilities within the prescribed time limit. About the only definitely known favourable fact was that Norman oil will flow at temperatures as low as 70 degrees below zero, which meant that there were no serious obstacles to all-year operations or pipeline distribution even under the rigors of the Arctic winter.

Having outlined the difficulties, Imperial Oil pledged its full co-operation, experience and facilities in the event that it was decided to go ahead.

On May 1st the U.S. Government executed a contract with Imperial Oil Limited in which details of Imperial's participation in the Canol project were set forth, including the drilling of new wells and production of oil within a few months at many times the rate ever experienced or anticipated in the 22 years of Norman Wells history. Under this contract the Army will obtain oil at prices comparable to those prevailing in the United States.

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Immediately Imperial began the task of recruiting men and supplies—draining some of its other Canadian operations for the former and aided in the latter by special priorities. There was no time to be lost because winter descends early on Fort Norman and the waterways which lead to it from Southern Canada.

When householders in Canada are beginning to think for the first time of flicking on the oil burner switch, the Mackenzie River is frozen and the initial blasts of winter have swept down from the bleak Arctic Circle. There was much to be done between that day in May and the day when the first icy winds would herald the onset of another trying season.

Work was begun simultaneously on various phases of the Canol project by U.S. Army engineers, private contractors and Imperial Oil. By June a camp and loading facilities had been built at Waterways, the railhead 300 miles toward the polar regions from Edmonton. From that point it is a 285-mile haul down the Athabasca and Slave Rivers to Fort Fitzgerald. Then comes a 16-mile portage necessitated by a series of rapids. The next leg of the arduous journey to Norman Wells calls for a 195-mile jaunt down the Slave River to Great Slave Lake, followed by a 125-mile trip across the lake to the head of the Mackenzie River. The final lap is a 550-mile trip down the river to Norman Wells.

That is transportation the hard way; no shiny rails of steel, no smooth concrete roads. River, portage, river, lake and river again!

The bare chronology of what happened in the fleeting months after May 1st is perhaps the most eloquent tribute to the amazing speed and efficiency with which the Army and Imperial working in close co-operation did an enormously difficult job.

By May a contract was signed in Washington. By the middle of June freight was flowing down the waterways bound for Norman Wells. On July 17th the first new well was brought in. By January, 1943, new producing wells had met the Army's original oil requirements, although it had meant pushing drilling operations through the bitter cold, snow and storms of winter.

—Now Proves Far Greater than Anticipated

But the story doesn't end here. As soon as it became apparent that oil could be produced in considerable quantity the Army raised its objectives many times the initial quota and Imperial to-day is hard at work to meet it.

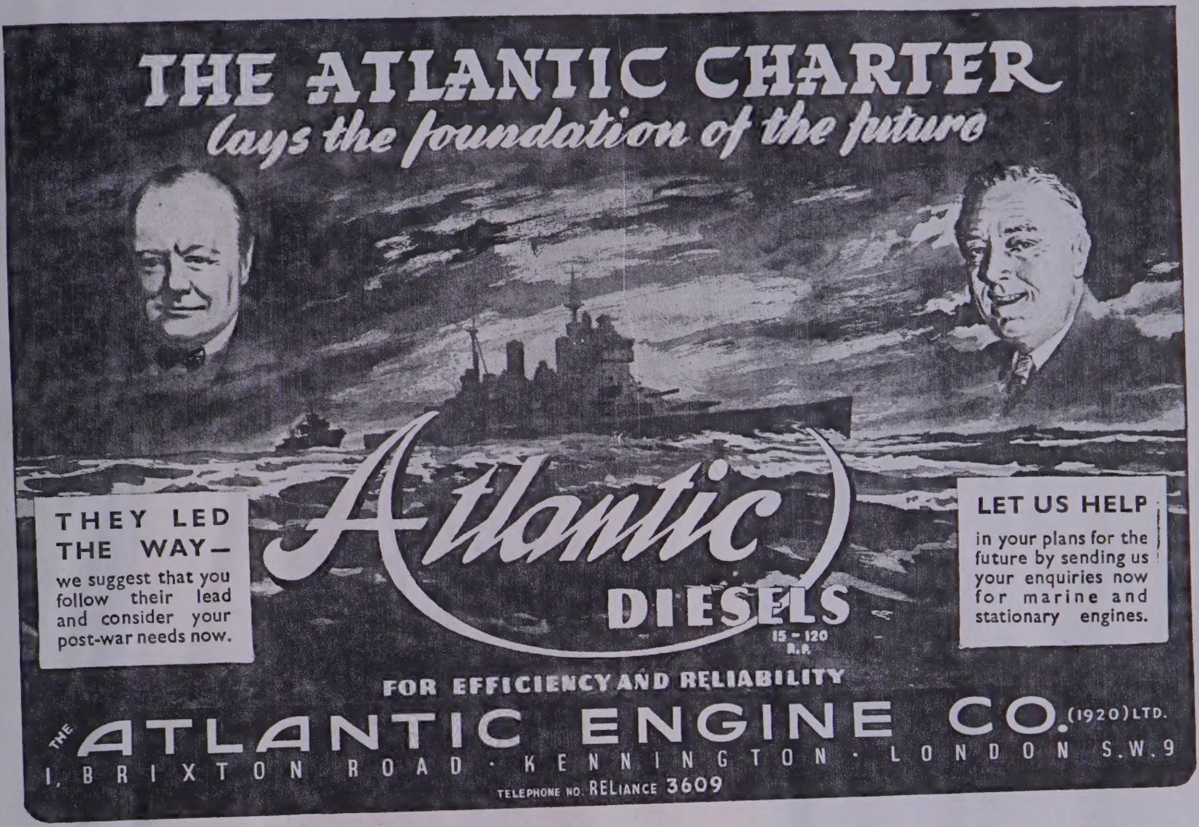
The area of the Norman discovery well has proved far larger and more productive than was anticipated. Instead of being limited to a few million barrels, it is on the order of a major oilfield—no East Texas to be sure, but comparable to the average major field in the United States.

Since January of this year additional wells have been drilled, including a number of dry holes. In addition it has been found that a large portion of the oil structure lies beneath the river.

This fact, coupled with conditions peculiar to the area, has posed a new challenge to Imperial's oil men, making the maximum recovery of the field's potential a real problem.

Additional areas have been obtained from the Canadian Government and exploratory drilling is now being carried on intensively in the region surrounding the discovery well, where the pioneering geological work by Imperial in years past had located promising structures.

In the meantime, an important reservoir of oil lies beneath capped wells waiting for the completion of the pipeline to White Horse. Imperial took no part in construction of this line or its terminal refinery. Construction crews working ever since last summer and through the winter from White Horse at one end and from Norman Wells at the other have made considerable progress. In so doing, Army engineers and workmen employed by private contractors have wrought a truly historic saga. Roads have been blasted through the wilderness, airfields have been built, wharves and loading



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acilities constructed, until to-day the Fort Norman area s no longer linked to civilisation by water route alone.

When the Canol project is completed, oil will flow to Alaska secure from any possibility of attack that might hreaten the otherwise normal route of supply by seaway and ankers.

It is a question what the end of the war will mean to Norman oil. Expanded only to meet military needs, the peace-time future of the field will probably depend on the peace-time development of the great Canadian North-West.

ARMY DEFEND THEIR PROJECT

This scheme is outside the control of Mr. Ickes, the Petroleum Administrator, and he, together with officials of the War Production Board and of the Budget Bureau, have of late been accusing the Army of wasting public funds on this project, it is reported.

To such an extent, in fact, that the Under-Secretary of War has had to come to the Army's defence. He told the Truman Committee of the Senate, which is investigating the matter, that the "completion and operation of the Canol project is necessary to the war effort. It must be apparent to all (he said) that the project may be a determining factor which will control the size and extent of an air offensive aimed at the heart of Japan.

"World-wide shortage of tankers and petroleum products is such that our offensive air operations might be measured by our capacity to produce and distribute petroleum products where needed and at the time required."

The day before Mr. Ickes had argued before the same Committee that Alaska should get its oil by tanker from Californian oil wells.

The Washington Correspondent of *The Daily Telegraph* (London) has cabled that those who support the Army on this issue suggest that the main reason for Mr. Ickes's attack is due to departmental jealousy. Mr. Ickes is in charge of the domestic petroleum programme, and objects therefore to any plan which his office did not initiate.

AWARDS FOR GALLANTRY

Honours for British Tanker Co. Personnel

THE following further list of Awards for Gallantry to members of the British Tanker Company's seagoing personnel has recently been announced:—

O.B.E.

Captain F. J. Goodchild.

The official citation in *The London Gazette* reads:—

"When the ship was sailing in convoy an enemy attack developed in darkness. A submarine was sighted and although fire was opened, the ship was torpedoed and badly damaged. It was decided to attempt to save the vessel and after trimming and discharging some ballast to lighten her she was able to maintain convoy speed. The following day she left the convoy and was brought safely to the nearest port. There were no casualties. The Master displayed courage and leadership of a high order throughout and acted promptly and determinedly when his ship was hit."

COMMENDED FOR BRAVE CONDUCT

The under-named were officially Commended for their services in connection with this incident:—

E. A. Hall, Chief Engineer. **S. R. Brackenridge,** Third Engineer
E. E. Clayton, Sixth Engineer.

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